

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet	1	of	13
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**Complete if Known**

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	1244 1758
Examiner Name	W000
Attorney Docket Number	10118.00012

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicants of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
C/P		US-3,676,360	7/25/72	Rubin et al.	
		US-3,787,600	1/28/74	McGee	
		US-3,913,229	10/21/75	Driskell et al.	
		US-3,929,971	12/30/75	Roy	
		US-4,097,835	7/14/78	Jarcho	
		US-4,497,075	2/5/85	Nwa et al.	
		US-4,612,038	4/23/85	Alexander et al.	
		US-4,599,085	7/8/86	Rless et al.	
		US-4,612,053	9/16/86	Brown et al.	
		US-4,655,777	4/7/87	Dunn et al.	
		US-4,680,610	11/14/89	Constantz et al.	
		US-4,697,260	1/30/99	Sumita	
		US-4,963,151	10/16/90	Ducheyne et al.	
		US-5,034,059	7/23/91	Constantz et al.	
	C/W		US-5,037,639	8/6/91	Tung
		US-5,047,031	9/10/91	Constantz et al.	
		US-5,053,212	10/1/91	Constantz et al.	
		US-5,092,868	3/3/92	Iwamoto et al.	
		US-5,129,905	7/14/92	Constantz et al.	
		US-5,181,930	1/26/93	Dumbleton et al.	
	US-5,192,330	3/9/93	Chang et al.		

[illegible]

Examiner Signature	<i>W. J. [Signature]</i>	Date Considered	6/12/03
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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<sup>2</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>3</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>4</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>5</sup> Applicant is to place a check mark here if English language Translation is attached.

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**Complete If Known**

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	1745 1753
Examiner Name	W080
Attorney Docket Number	10118.00012

(use as many sheets as necessary)

Sheet	2	of	13
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U.S. PATENT DOCUMENTS					
Examiner Initials *	Cite No.	Document Number Number - Kind Code* (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	c/p	US-5,522,893	6/4/96	Chow et al.	
		US- 5,236,491	8/24/93	Sugihara et al.	
		US- 5,525,148	6/11/96	Chow et al.	
		US- RE 33,221	5/22/90	Brown et al.	
		US- RE 33,161	2/9/90	Brown et al.	
		US- 5,339,294	5/9/94	Constantz et al.	
		US- 5,455,231	10/3/95	Constantz et al.	
		US- 5,498,390	3/5/96	Ison et al.	
		US- 5,542,973	6/9/96	Chow et al.	
		US- 5,545,254	6/13/96	Chow et al.	
		US- 5,556,687	9/17/96	McMillin	
		US- 5,652,058	7/29/97	Pagin	
		US- 5,695,729	12/9/97	Chow et al.	
		US- 5,721,048	2/24/98	Marcolongo et al.	
		US- 5,756,518	6/16/99	Laurinoti et al.	
		US- 5,976,234	11/2/99	Chow et al.	
		US- 5,967,824	12/7/99	Chow et al.	
	US- 6,077,989	6/20/00	Kandiel et al.		
	US- 6,136,029	10/24/00	Johnson et al.		
	US- 6,207,098	3/27/01	Nakanishi et al.		

[illegible]

**Examiner  
Signature**

Date Considered

5/12/03

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<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

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\*no translation

Application Number	10/057,554
Filing Date	January 23, 2003
First Named Inventor	Laurence C. Chagnon
Group Art Unit	1734 / 1765
Examiner Name	10/057,554
Attorney Docket Number	60118 00012

## U.S. PATENT DOCUMENTS

[illegible]

## FOREIGN PATENT DOCUMENTS

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Signature

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\*no translation

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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 4 of 13

## Complete if Known

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	124 123
Examiner Name	W000
Attorney Docket Number	10118.00012

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
anw		Briner, et al., "Significance of Enamel Remineralization", <i>J. Dent. Res.</i> 53:239-243 (1974) *	
		Silverstone, "Remineralization Phenomena", <i>Caries Res.</i> 11 (Supp. 1): 59-84 (1977) *	
		Brown, "Solubilities of Phosphates and Other Sparingly Soluble Compounds, from Griffith, et al., <i>Environmental Phosphorous Handbook</i> (John Wiley & Sons, New York 1973) *	
		Miyazaki, et al., "An Infrared Spectroscopic Study of Cement Formation of Polymeric Calcium Phosphate Cement," <i>Journal of Japanese Society for Dental Materials and Devices</i> , Vol. II, No. 2, 1992. (1)	
anw		<del>Brown, et al., "Crystallography of Tetracalcium Phosphate," <i>J. Res. Nat. Bur. Stand.</i> 69A: 547-551 (1965) *</del>	
		<del>Brown and Chow, "Singular Points in the Chemistry of Phosphates," <i>ABSTRACTS</i> No. 130, <i>J. Dent. Res.</i> 54: 74 (1975)</del>	
cmf		Driskell, et al., "Development of Ceramic and Ceramic Composite Devices for Maxillofacial Application", <i>J. Biomed. Mat. Res.</i> 6: 343-361 (1972) *	
		Gelhard et al, "Rehardening of Artificial Enamel Lesions in Vivo", <i>Caries Res.</i> 13: 80-83 (1979) *	
		Gregory, et al., "Solubility of $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$ in the System $\text{Ca}(\text{OH})_2 - \text{H}_3\text{PO}_4 - \text{H}_2\text{O}$ at 5, 15, 25, and 37.5 °C," <i>J. Res. Nat. Bur. Stand.</i> 74A: 461-473 (1970) *	
anw		Gregory, et al., "Solubility of $\text{Ca}_3(\text{PO}_4)_2$ in the System $\text{Ca}(\text{OH})_2 - \text{H}_3\text{PO}_4 - \text{H}_2\text{O}$ at 5, 15, 25 and 37°C," <i>J. Res. Nat. Bur. Stand.</i> 78A: 667-674 (1974) *	
		<del>Hunt et al., "Root Penetration I. Observation of Dental Tubules in Treatment of Root Hypersensitivity", <i>J. Periodontol.</i> 43: 373-380 (1972)</del>	
anw		Levine, "Remineralization of Natural Carious Lesions of Enamel in vitro," <i>Brit. Dent. J.</i> 137: 132-134 (1974). *	
		McDowell, et al., "Solubility of $\text{Ca}_3(\text{PO}_4)_2$ in the System $\text{Ca}(\text{OH})_2 - \text{H}_3\text{PO}_4 - \text{H}_2\text{O}$ at 5, 15, 25 and 37°C," <i>J. Res. Nat. Bur. Stand.</i> 81A:273-281 (1977) *	
cmf		McDowell, et al., "Solubility Study of Calcium Hydrogen Phosphate. Ion Pair Formation," <i>Inorg. Chem.</i> 10:1638-1643 (1971). *	

Examiner Signature	W000	Date Considered	5/12/03
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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 5

of 13

## Complete if Known

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	1734 175
Examiner Name	WDSV
Attorney Docket Number	10118.00012

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
OMP		Moreno, et al., "Stability of Dicalcium Phosphate Dihydrate in Aqueous Solutions and Solubility of Octacalcium Phosphate," <i>Soil Sci. Soc. Am. Proc.</i> 21: 99-102 (1960) *	
		Patel, et al., "Solubility of CaHPO <sub>4</sub> ·2H <sub>2</sub> O in the Quaternary System Ca(OH) <sub>2</sub> - H <sub>3</sub> PO <sub>4</sub> - NaCl - H <sub>2</sub> O at 25°C," <i>J. Res. Nat. Bur. Stand.</i> 78A: 675-681 (1974) *	
		Pickel, et al. "The Effect of a Chewing Gum Containing Dicalcium Phosphate on Salivary Calcium and Phosphate", <i>Adv. J. Med. Sci.</i> 2: 286-287 NO DATE	
		Zimmerman, et. al., "The Effect of Remineralization Fluids on Carious Lesions in Vitro," <i>IADR Abstract No. 282</i> (1979) *	
		<u>Guide to Dental Materials and Devices</u> , 7th Ed. (ADA 1974) pp. 49-64 *	
		Brown, et al., (1983): "A New Calcium Phosphate, Water Setting Cement," <u>Cements Research Progress</u> 1986, P.W. Brown, Ed., Westerville, Ohio: American Ceramic Society, pp. 352-379 *	
		Chohayeb, A.A., et al., (1987): Evaluation of Calcium Phosphate as a Root Canal Sealer-Filler Material, <i>J. Endod</i> 13, 384-386 (9-1987) *	
		Hong, et al., (1989): The Periapical Tissue Reactions to a Calcium Phosphate Cement in the Teeth of Monkeys, <i>J. Dent. Res.</i> (submitted) *	
		Constantino, et al. (1989): Evaluation of a New Hydroxyapatite Cement: Cranioplasty in a Cat Model. The Fifth International Symposium on Facial Plastic Reconstructive Surgery of the Head and Neck, Toronto, Canada *	
		De Rijk, et al. (1986): Clinical Evaluation of an Hydroxyapatite Precipitate for the Treatment of Dental Hypersensitivity, <u>Biomedical Engineering V. Recent Developments</u> , Proc of 5th Southern Biomedical Engineering Conference, Subrata Saha, Ed., New York: Pergamon Press, pp. 336-339 *	
		Grunninger et al. (1984): Evaluation of the Biocompatibility of a New Calcium Phosphate Setting Cement, <i>J. Dent. Res.</i> , 63 (Special Issue) Abst. No. 270 *	
		Hanker et al. (1987): Calcium Phosphate Binders for Hydroxyapatite Particles for Bone Repair, <i>J. Dent. Res.</i> 66, Abst. No. 1144 *	
		<del>Lu, et al. (1988): New Attachment Following Electroless Novel Calcium Phosphate System, <i>J. Dent. Res.</i> 67: 352, Abst. No. 1913</del>	
		<del>Schneider, et. al. (1996): Remineralization of Root Caries Lesion by a Calcium Phosphate Slurry, <i>J. Dent. Res.</i> 75, Abst. no. 855</del>	

Examiner Signature	WDSV	Date Considered	5/12/03
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 6

of 13

### Complete if Known

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	3744 1755
Examiner Name	WJOSD
Attorney Docket Number	10118.00012

### OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
WJOSD		Sugawara, et. al. (1987): A Calcium Phosphate Root Canal Sealer-Filler, <i>J. Dent Res.</i> 66: 296 Abst. No. 1516	
		Sugawara et al (1989): Formation of Hydroxyapatite in Hydrogels from Tetracalcium Phosphate/Dicalcium Phosphate Mixtures, <i>Nihon Univ. Sch. Dent.</i> , Vol. 31, No. 1, 372-81, 1989	
		Block, et al. (1988): Correction of Vertical Orbital Dystopia with a Hydroxyapatite Orbital Floor Graft, <i>J. Oral Maxillofac Surg</i> 46: 420-425, 1988	
		Salzer, et al. (1989): Porous Hydroxyapatite as an Onlay Bone-Graft Substitute for Maxillofacial Surgery, <i>Plast and Recon Surg</i> 84, 2:236-244, 1989	
		Kenney, et al. (1988): The Use of a Porous Hydroxyapatite Implant in Periodontal Defects, <i>J. Periodontol.</i> pp. 67-72 Feb. 1988	
		Zide et al (1987): Hydroxyapatite Cranioplasty Directly Over Dura, <i>J. Oral Maxillofac Surg</i> 45:481-486, 1987	
		Waite, et al. (1986): Zygomatic Augmentation with Hydroxyapatite, <i>J. Oral Maxillofac Surg</i> 44:349-352, 1986	
		Verwoerd, et al. (1987): Porous Hydroxyapatite-perichondrium Graft in Cricoid Reconstruction, <i>Acta Otolaryngol (Stockh)</i> 1987; 103:496-502	
		Grote, (1984): Tympanoplasty With Calcium Phosphate, <i>Arch Otolaryngology</i> 110:197-199, 1984	
		Kent, et al. (1983): Alveolar Ridge Augmentation Using Nonresorbable Hydroxyapatite With or Without Autogenous Cancellous Bone, <i>J. Oral Maxillofac Surg</i> 41:629-642, 1983	
		Picuch (1986): Augmentation of the Atrophic Edentulous Ridge with Porous Replamorph Hydroxyapatite (Interpore-200), <i>Dental Clinics of North America</i> 30, 2:291-305, 1986	
		Misch (1987): Maxillary Sinus Augmentation for Endosteal Implants: Organized Alternative Treatment Plans, <i>Int J Oral Implant</i> 4, 2:49-58, 1987	
		Chow, L.C., "Calcium Phosphate Materials: Reactor Response" <i>Adv Dent Res</i> 2(1): 191-184, August 1988	
WJOSD		Fukase, et al., "Setting Reactions and Compressive Strengths of Calcium Phosphate Cements", <i>J Dent Res</i> 69(12):1852-1856, December 1990	

Examiner  
Signature

WJOSD

Date

Considered

5/12/03

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\*no month

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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 7 of 13

## Complete If Known

Application Number 10/057,554  
Filing Date January 23, 2002  
First Named Inventor Laurence C. Chow  
Group Art Unit 1712-1753  
Examiner Name WJDP  
Attorney Docket Number 10118.00012

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
WJDP	1	Chow, et al., "Self-Setting Calcium Phosphate Cements," Mat. Res. Soc. Symp. Proc. Vol. 179, 1991	<input checked="" type="checkbox"/>
		Miyazaki, et al., "Chemical Change of Hardened PCA/CPC Cements in Various Storing Solutions," The Journal of the Japanese Soc. for Den. Mats. and Devices, Vol. 11, No. 2, 1992	<input checked="" type="checkbox"/>
		Fukase et al., "Thermal Conductivity of Calcium Phosphate Cement," IADR Abstract, 1990	<input checked="" type="checkbox"/>
		Sugawara, et al., "An In Vitro Study of Dentin Hypersensitivity Using Calcium Phosphate Cement," Jour of Jap. Soc. for Dent. Mats. & Devices, Vol. 8, No. 2 1989	<input checked="" type="checkbox"/>
		Constantino, et al., "Hydroxyapatite Cement - Basic Chemistry and Histologic Properties," Arch. of Otolaryngology - Head & Neck Surgery, Vol. 117, pp. 379-84 (Apr. 1991).	<input checked="" type="checkbox"/>
		Freidman, et al., "Hydroxyapatite Cement - Obliteration and Reconstruction of the Cat Frontal Sinus," Arch. of Otolaryngology - Head & Neck Surgery, Vol. 117, pp. 385-89 (Apr. 1991).	<input checked="" type="checkbox"/>
		Calcium Phosphate cements: action of setting regulators on the properties of the $\beta$ -tricalcium phosphate-monocalcium phosphate cements	
		Mirtchi, et al., "Calcium phosphate cements: study of the $\beta$ -tricalcium phosphate-monocalcium phosphate system," Biomaterials, Vol 10, pp. 475-80 (1989).	<input checked="" type="checkbox"/>
		Mirtchi, et al., "Calcium phosphate cements: study of the $\beta$ -tricalcium phosphate-dicalcium phosphate-calcite cements," Biomaterials, Vol 11, pp. 83-88 (1990).	<input checked="" type="checkbox"/>
		Mirtchi, et al., "Calcium phosphate cements: effect of fluorides on the setting and hardening of $\beta$ -tricalcium phosphate-dicalcium phosphate-calcite cements," Biomaterials, Vol 12, pp. 505-10 (1991).	<input checked="" type="checkbox"/>
		Fulmer, et al., "Effects of Na <sub>2</sub> HPO <sub>4</sub> and NaH <sub>2</sub> PO <sub>4</sub> on Hydroxyapatite Formation," J. Biomed. Mat. Res., Vol. 27, pp. 1095-1102 (1993).	<input checked="" type="checkbox"/>
		Ishikawa, et al., "The Hydrolysis of Anhydrous Dicalcium Phosphate into Hydroxyapatite," J. of Dent. Res., Vol. 72, No. 2, pp. 474-480 (Feb. 1993).	<input checked="" type="checkbox"/>
		Sugawara, et al., "In Vitro Evaluation of the Sealing Ability of a Calcium Phosphate Cement When Used As a Root Canal Sealer-Filler," J. of Endodontics, Vol. 16, No. 4, pp. 162-165 (1990).	<input checked="" type="checkbox"/>
WJDP		Shindo, et al., "Facial Skeletal Augmentation Using Hydroxyapatite Cement," Arch. of Otolaryngology - Head & Neck Surgery, Vol. 119, pp. 185-90 (Feb. 1993).	<input checked="" type="checkbox"/>

Examiner Signature

Date Considered

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Sheet 8 of 13

## Complete if Known

Application Number 10/057,554  
Filing Date January 23, 2002  
First Named Inventor Laurence C. Chow  
Group Art Unit 3743  
Examiner Name WOOD  
Attorney Docket Number 10118.00012

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

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W		Constantino, et al., "Experimental Hydroxyapatite Cement Cranioplasty," <i>Plastic and Reconstructive Surgery</i> , Vol. 90 No. 2, pp. 174-85 (Aug. 1992).	
W		Sanin, et al., K. Ishikawa, S. Takagi, L.C. Chow and E.D. Eanes, "Effects of Additives on Setting Reaction of Calcium Phosphate Cement," IADR Abstr. #666 J. Dent Res. 71 189 (1992).	
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W		Bermudez, et al., Optimization of Calcium Orthophosphate Cement formulation occurring in the combination of monocalcium phosphate monohydrate with calcium oxide, <i>J. Mater.Sci:Mater Med</i> 5:67-71 (1994)	

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Substitute for form 1449A/PTO		<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)		Application Number	10/057,554
		Filing Date	January 23, 2002
		First Named Inventor	Laurence C. Chow
		Group Art Unit	1714 1755
		Examiner Name	Warp
Sheet 9 of 13	Attorney Docket Number	10118.00012	

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clw		Dickens-Venz, et. al., (1994) "Physical and chemical properties of resin-reinforced calcium phosphate cements," Dent. Mater. 10:100-106. *	
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		Mirichi et al., "Calcium Phosphate Cements: Action of Setting Regulars on the Properties of the $\beta$ -tricalcium Phosphate-Monocalcium Phosphate Cements" Biomaterials, Vol. 10, pp. 634-38 (1989).	
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Sheet 10 of 13

**Complete if Known**

Application Number	10/057,554
Filing Date	January 23, 2002
First Named Inventor	Laurence C. Chow
Group Art Unit	1244 175
Examiner Name	WOOD
Attorney Docket Number	10118.00012

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CHW		Fujikawa et al., (1993), "Histopathological Reaction of Calcium Phosphate Cement in Periodontal Bone Defect", <i>Dent. Mater. J.</i> 10:45-57. *	
CHW		Sugawara et al., (1995), "Histopathological Reaction of Calcium Phosphate Cement Root Canal Filler", <i>J. Hard Tissue Biology</i> , 4:1-7. *	
		Costantino et al. (1989): Evaluation of a New Hydroxyapatite Cement: Basic Chemistry and Histology. The First International Symposium on Facial Plastic Reconstructive Surgery of the Head and Neck, Toronto, Canada.	
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		Groenier, "New Cement Makes Medical History", <i>ADA NEWS</i> , January 24, 1999, Vol. 24, No. 1.	
CHW		Shors et al., "Porous Hydroxyapatite", <i>An Introduction to Bioceramics</i> , pp. 181-198. NO DATE	
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## Complete if Known

Application Number 10/057,554  
Filing Date January 23, 2002  
First Named Inventor Laurence C. Chow  
Group Art Unit 1714-1758  
Examiner Name WOOD  
Attorney Docket Number 10118.00012

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all		English Translation, Japanese Examiner's Citation to References, February 2, 1999.	

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Sheet 12

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Application Number 10/057,554  
Filing Date January 23, 2002  
First Named Inventor Laurence C. Chpw  
Group Art Unit 3234 / 35  
Examiner Name WOD  
Attorney Docket Number 10118.00012

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CAU		Australian Examiner's Citation to References, September 20, 1996.	
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CAU		de Groot, "Ceramics of Calcium Phosphates: Preparation and Properties", <u>Bioceramics of Calcium Phosphate</u> , pp. 99-114. NO DATE	

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